Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-36 (canceled)

Claim 37 (currently amended). An arrangement for use in an electricity meter, the electricity meter operably coupled through an external transformer to measure electricity consumption on a power line, the arrangement operable to compensate for measurement errors, the arrangement comprising:

a) a source of digital measurement signals comprising an internal sensor circuit and an analog-to-digital conversion circuit, the internal sensor circuit configured to convert power line signals received from the external transformer to measurement signals, the analog-to-digital conversion circuit configured to receive the measurement signals from the sensor circuit and convert the measurement signals to digital measurement signals~~source of digital signal measurement signals operably coupled to receive power consumption signals from the external transformer~~;

b) a memory storing data representative of at least one error rating for the external transformer;

c) a processing circuit operably coupled to the source of digital measurement signals to receive digital measurement signals therefrom; the processing circuit operable to

obtain at least one electricity consumption measurement value corresponding to at least a part of the digital measurement signals, and

adjust the at least one electricity consumption measurement value using at least a portion of the stored data.

Claim 38 (previously presented) The arrangement of claim 37 wherein the at least one electricity consumption measurement value comprises a calculated energy consumption value.

Claim 39 (previously presented) The arrangement of claim 37 wherein the at least one electricity consumption measurement value comprises at least one of a sampled current value or a sampled voltage value.

Claim 40 (currently amended) The arrangement of claim 37, wherein the processing circuit is further operable to adjust the at least one electricity consumption measurement value using an internal calibration value, the internal calibration value corresponding to at least one error associated with the internal sensor circuit.

Claim 41 (previously presented). An apparatus for use in an electricity meter, the electricity meter operably coupled through an external transformer to measure electricity consumption on a power line; the apparatus operable to compensate for measurement errors of an external transformer, the apparatus comprising:

a) a memory storing data representative of at least one error rating for the external transformer;

b) a processing circuit operable to

obtain at least one electricity consumption measurement value, the electricity consumption measurement value representative of a waveform sample, the waveform sample derived from a current waveform or a voltage waveform, and

adjust at least one electricity consumption measurement value using at least a portion of the stored data.

Claim 42 (previously presented). The apparatus of claim 41 wherein the waveform sample is derived from a current waveform, and wherein the processing circuit is further operable to:

obtain at least one error rating comprising a ratio error rating for the external transformer;

adjust the at least one electricity consumption measurement value using the stored data representative of the ratio error rating.

Claim 43 (previously presented). The apparatus of claim 41 wherein the processing circuit is further operable to:

obtain at least one error rating comprising a phase error rating for the external transformer; and

adjust at least one electricity consumption measurement value using the stored data representative of the phase error.

Claim 44 (previously presented). The apparatus of claim 41 wherein the processing circuit is further operable to adjust the at least one electricity consumption measurement value by multiplying either the at least one electricity consumption measurement value or a phase shifted electricity compensation measurement value by a dynamic compensation factor.

Claim 45 (previously presented). The apparatus of claim 44 wherein the processing circuit is further operable to adjust the at least one electricity consumption measurement value by multiplying either the at least one electricity consumption measurement value or the phase shifted electricity consumption measurement value by the dynamic compensation factor, the dynamic compensation factor varying with respect to an average electricity consumption measurement value.

Claim 46 (previously presented). The apparatus of claim 45 wherein the dynamic compensation value varies in an inverse relationship with respect to the average electricity consumption measurement value.

Claim 47 (previously presented). The apparatus of claim 45 wherein the waveform sample is derived from a current waveform, and wherein the processing circuit is further operable to:

multiply the at least one electricity consumption measurement value using a ratio correction factor that is a function of the stored data representative of a ratio error rating and an average current measurement value.

Claim 48 (previously presented). The apparatus of claim 45 wherein the processing circuit is further operable to:

multiply the phase shifted electricity consumption measurement value using a phase correction factor that is a function of the stored data representative of the phase error rating and an average current measurement value to produce a phase shift value; adding the phase shift value to the at least one sampled current value.

Claim 49 (previously presented). The apparatus of claim 45 wherein the waveform sample is derived from a current waveform, and wherein the processing circuit is further operable to:

adjust dynamically the at least one electricity consumption measurement value using a correction factor that has an inverse relationship to an average current measurement value.

Claim 50 (previously presented). The apparatus of claim 41 wherein the processing circuit includes a digital signal processor.

Claim 51 (previously presented). The apparatus of claim 41 wherein the memory includes an EEPROM.

Claim 52 (previously presented). The apparatus of claim 41 further comprising a source of digital measurement signals operably coupled to receive energy consumption signals from the external transformer, the source of digital measurement signals operable to generate a plurality of waveform samples including the waveform sample from the received energy consumption signals.

Claim 53 (currently amended). The apparatus of claim 52 wherein the source of digital measurement signals includes an analog-to-digital converter configured to generate the plurality of waveform samples including the waveform sample.

Claim 54 (currently amended). The apparatus of claim 53 further comprising an internal sensor circuit configured to convert energy consumption signals received from the external transformer to measurement signals, and wherein the analog-to-digital conversion circuit is configured to receive the measurement signals from the sensor circuit and convert the measurement signal to the plurality of waveform samples. ~~operably coupled to receive the energy consumption signals from the external transformer, the internal sensor circuit operably connected to the analog-to-digital converter.~~

Claim 55 (previously presented). An apparatus for use in an electricity meter, the electricity meter operably coupled through an external transformer to measure electricity consumption on a power line; the apparatus operable to compensate for measurement errors of an external transformer, the apparatus comprising:

a) a memory storing data representative of at least one error rating for the external transformer;

b) a processing circuit operable to

obtain at least one electricity consumption measurement value, the at least one electricity consumption measurement value comprising either a sampled current value or a sampled voltage value, and

adjust the at least one electricity consumption measurement value using at least a portion of the stored data.

adjust the at least one electricity consumption measurement value by multiplying either the at least one electricity consumption measurement value or a phase shifted electricity compensation measurement value by a dynamic compensation factor, the dynamic compensation factor varying with respect to an average electricity consumption measurement value.

Claim 56 (previously presented). The apparatus of claim 55 wherein the dynamic compensation value varies in an inverse relationship with respect to the average electricity consumption measurement value.

Claim 57 (previously presented). The apparatus of claim 55 wherein the processing circuit is further operable to:

obtain at least one sampled current value; and

multiply the at least one sampled current value using a ratio correction factor that is a function of the stored data representative of a ratio error rating and an average current measurement value.

Claim 58 (previously presented). The apparatus of claim 55 wherein the processing circuit is further operable to:

multiply the phase shifted electricity consumption measurement value using a phase correction factor that is a function of the stored data representative of the phase error rating and an average current measurement value to produce a phase shift value; adding the phase shift value to the at least one sampled current value.

Claim 59 (previously presented). The apparatus of claim 55 wherein the processing circuit is further operable to:

obtain at least one sampled current value; and

adjust dynamically the at least one sampled current value using a correction factor that has an inverse relationship to an average current measurement value.

Claim 60 (currently amended). The apparatus of claim 54 wherein the processing circuit is further operable to adjust the at least one electricity consumption measurement value using an internal calibration value, the internal calibration value corresponding to at least one error associated with the internal sensor circuit.